

SEQUENCE LISTING

<110> Max-Planck-Gesellschaft zur Förderung der Wissensc

5 <120> A new Assay to Detect Substances Useful for the Therapy
of Cancer and Infectious Diseases

<130> GI-003 PCT

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<141> 2000-09-18

<150> EP 99 118 385.6

<151> 1999-09-16

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<170> PatentIn Ver. 2.1

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Asn Gln Leu Pro Leu Val Val Asp Ala Ile Cys Thr Arg Gly Ala Asp
 625 630 635 640

15 Met Ser Val Pro Asp Glu Lys Gly Asn Pro Pro Leu Trp Leu Ala Leu
 645 650 655

Ala Asn Asn Leu Glu Asp Ile Ala Ser Thr Leu Val Arg His Gly Cys
 20 660 665 670

Asp Ala Thr Cys Trp Gly Pro Gly Pro Gly Gly Cys Leu Gln Thr Leu
 675 680 685

25 Leu His Arg Ala Ile Asp Glu Asn Asn Glu Pro Thr Ala Cys Phe Leu
 690 695 700

Ile Arg Ser Gly Cys Asp Val Asn Ser Pro Arg Gln Pro Gly Ala Asn
 705 710 715 720

30 Gly Glu Gly Glu Glu Glu Ala Arg Asp Gly Gln Thr Pro Leu His Leu
 725 730 735

Ala Ala Ser Trp Gly Leu Glu Glu Thr Val Gln Cys Leu Leu Glu Phe
 35 740 745 750

Gly Ala Asn Val Asn Ala Gln Asp Ala Glu Gly Arg Thr Pro Ile His
 755 760 765

40 Val Ala Ile Ser Ser Gln His Gly Val Ile Ile Gln Leu Leu Val Ser
 770 775 780

His Pro Asp Ile His Leu Asn Val Arg Asp Arg Gln Gly Leu Thr Pro
 785 790 795 800

Phe Ala Cys Ala Met Thr Phe Lys Asn Asn Lys Ser Ala Glu Ala Ile
 805 810 815

5 Leu Lys Arg Glu Ser Gly Ala Ala Glu Gln Val Asp Asn Lys Gly Arg
 820 825 830

Asn Phe Leu His Val Ala Val Gln Asn Ser Asp Ile Glu Ser Val Leu
 835 840 845

10 Phe Leu Ile Ser Val His Ala Asn Val Asn Ser Arg Val Gln Asp Ala
 850 855 860

Ser Lys Leu Thr Pro Leu His Leu Ala Val Gln Ala Gly Ser Glu Ile
 865 870 875 880

15 Ile Val Arg Asn Leu Leu Leu Ala Gly Ala Lys Val Asn Glu Leu Thr
 885 890 895

Lys His Arg Gln Thr Ala Leu His Leu Ala Ala Gln Gln Asp Leu Pro
 20 900 905 910

Thr Ile Cys Ser Val Leu Leu Glu Asn Gly Val Asp Phe Ala Ala Val
 915 920 925

25 Asp Glu Asn Gly Asn Asn Ala Leu His Leu Ala Val Met His Gly Arg
 930 935 940

Leu Asn Asn Ile Arg Val Leu Leu Thr Glu Cys Thr Val Asp Ala Glu
 945 950 955 960

30 Ala Phe Asn Leu Arg Gly Gln Ser Pro Leu His Ile Leu Gly Gln Tyr
 965 970 975

Gly Lys Glu Asn Ala Ala Ala Ile Phe Asp Leu Phe Leu Glu Cys Met
 35 980 985 990

Pro Gly Tyr Pro Leu Asp Lys Pro Asp Ala Asp Gly Ser Thr Val Leu
 995 1000 1005

40 Leu Leu Ala Tyr Met Lys Gly Asn Ala Asn Leu Cys Arg Ala Ile Val
 1010 1015 1020

Arg Ser Gly Ala Arg Leu Gly Val Asn Asn Asn Gln Gly Val Asn Ile
 1025 1030 1035 1040

Phe Asn Tyr Gln Val Ala Thr Lys Gln Leu Leu Phe Arg Leu Leu Asp
 1045 1050 1055

Met Leu Ser Lys Glu Pro Pro Trp Cys Asp Gly Ser Tyr Cys Tyr Glu
 5 1060 1065 1070

Cys Thr Ala Arg Phe Gly Val Thr Thr Arg Lys His His Cys Arg His
 1075 1080 1085

10 Cys Gly Arg Leu Leu Cys His Lys Cys Ser Thr Lys Glu Ile Pro Ile
 1090 1095 1100

Ile Lys Phe Asp Leu Asn Lys Pro Val Arg Val Cys Asn Ile Cys Phe
 1105 1110 1115 1120

15 Asp Val Leu Thr Leu Gly Gly Val Ser
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 <213> Homo sapiens

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 cagtctttct atcagcttca ctcacattac gaggaagaac actcagggga agaccgtgat 180
 gtcaaagggc aaattaaaag tcttgtccag aaggctaaaa aagcaaagga caggttggtg 240
 30 aaacgagaag gggatgatcg agcagagtca gggacccaag gatatgagtc tttcagctat 300
 ggagggggtg atccttacat gtgggaaccc caggagcttg gtgctgtgag gagccatctt 360
 tccgacctca aaaaacaccg agctgctaga attgaccact atgttgtgga agtcaataaa 420
 ctaataatca ggtagagaa gctcactgca ttgacagaa caaatactga gtctgcaaag 480
 attcagcaa tagaaaagtc tgtggtgctt tgggtcaacg accaggatgt cctttctgt 540
 35 ccagactgtg ggaataagtt cagcatccgg aaccgccgcc accactgccg cctctgcggg 600
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 40 cagcagattg atgagaagga gcacacacct gacatcgtga agctctacga gaaattacga 900
 ctttgcatgg agaaagttga ccagaaagct ccagaataca tcaggatggc agcatcatta 960
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ctttttgtgc aggaaaagtt gcttggtttg atgtcactgc cgaccaaaga acagtttgag 1200
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 aacggggagg tggcatctct ccgcaggggc cctgccccct tgagaaaggc tgagggctgg 1380
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 20 gataacatca aggcatacat ctttgatgcc aagcagtgcg gccgcctgga tgaggtagag 2340
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 <212> PRT
 <213> Homo sapiens

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 Pro Leu Cys Leu Lys Asp Leu Gln Ser Phe Tyr Gln Leu His Ser His
 35 20 25 30
 Tyr Glu Glu Glu His Ser Gly Glu Asp Arg Asp Val Lys Gly Gln Ile
 35 40 45
 40 Lys Ser Leu Val Gln Lys Ala Lys Lys Ala Lys Asp Arg Leu Leu Lys
 50 55 60
 Arg Glu Gly Asp Asp Arg Ala Glu Ser Gly Thr Gln Gly Tyr Glu Ser
 65 70 75 80

Phe Ser Tyr Gly Gly Val Asp Pro Tyr Met Trp Glu Pro Gln Glu Leu
85 90 95

Gly Ala Val Arg Ser His Leu Ser Asp Phe Lys Lys His Arg Ala Ala
5 100 105 110

Arg Ile Asp His Tyr Val Val Glu Val Asn Lys Leu Ile Ile Arg Leu
115 120 125

10 Glu Lys Leu Thr Ala Phe Asp Arg Thr Asn Thr Glu Ser Ala Lys Ile
130 135 140

Arg Ala Ile Glu Lys Ser Val Val Pro Trp Val Asn Asp Gln Asp Val
145 150 155 160

15 Pro Phe Cys Pro Asp Cys Gly Asn Lys Phe Ser Ile Arg Asn Arg Arg
165 170 175

20 His His Cys Arg Leu Cys Gly Ser Ile Met Cys Lys Lys Cys Met Glu
180 185 190

Leu Ile Ser Leu Pro Leu Ala Asn Lys Leu Thr Ser Ala Ser Lys Glu
195 200 205

25 Ser Leu Ser Thr His Thr Ser Pro Ser Gln Ser Pro Asn Ser Val His
210 215 220

Gly Ser Arg Arg Gly Ser Ile Ser Ser Met Ser Ser Val Ser Ser Val
225 230 235 240

30 Leu Asp Glu Lys Asp Asp Asp Arg Ile Arg Cys Cys Thr His Cys Lys
245 250 255

35 Asp Thr Leu Leu Lys Arg Glu Gln Gln Ile Asp Glu Lys Glu His Thr
260 265 270

Pro Asp Ile Val Lys Leu Tyr Glu Lys Leu Arg Leu Cys Met Glu Lys
275 280 285

40 Val Asp Gln Lys Ala Pro Glu Tyr Ile Arg Met Ala Ala Ser Leu Asn
290 295 300

Ala Gly Glu Thr Thr Tyr Ser Leu Glu His Ala Ser Asp Leu Arg Val
305 310 315 320

Glu Val Gln Lys Val Tyr Glu Leu Ile Asp Ala Leu Ser Lys Lys Ile
 325 330 335

5 Leu Thr Leu Gly Leu Asn Gln Asp Pro Pro Pro His Pro Ser Asn Leu
 340 345 350

Arg Leu Gln Arg Met Ile Arg Tyr Ser Ala Thr Leu Phe Val Gln Glu
 355 360 365

10 Lys Leu Leu Gly Leu Met Ser Leu Pro Thr Lys Glu Gln Phe Glu Glu
 370 375 380

Leu Lys Lys Lys Arg Lys Glu Glu Met Glu Arg Lys Arg Xaa Val Glu
 385 390 395 400

15 Arg Gln Ala Ala Leu Glu Ser Gln Arg Arg Leu Glu Glu Arg Gln Ser
 405 410 415

Gly Leu Ala Ser Arg Ala Ala Asn Gly Glu Val Ala Ser Leu Arg Arg
 20 420 425 430

Gly Pro Ala Pro Leu Arg Lys Ala Glu Gly Trp Leu Pro Leu Ser Gly
 435 440 445

25 Gly Gln Gly Gln Ser Glu Asp Ser Asp Pro Leu Leu Gln Gln Ile His
 450 455 460

Asn Ile Thr Ser Phe Ile Arg Gln Ala Lys Ala Ala Gly Arg Met Asp
 465 470 475 480

30 Glu Val Arg Thr Leu Gln Glu Xaa Leu Arg Gln Leu Gln Asp Glu Tyr
 485 490 495

Asp Gln Gln Gln Thr Glu Lys Ala Ile Glu Leu Ser Arg Arg Gln Ala
 35 500 505 510

Glu Glu Glu Asp Leu Gln Arg Glu Gln Leu Gln Met Leu Arg Glu Arg
 515 520 525

40 Glu Leu Glu Arg Glu Arg Glu Gln Phe Arg Val Ala Ser Leu His Thr
 530 535 540

Arg Thr Arg Ser Leu Asp Phe Arg Glu Ile Gly Pro Phe Gln Leu Glu
 545 550 555 560

Pro Ser Arg Glu Pro Arg Thr His Leu Ala Tyr Ala Leu Asp Leu Gly
 565 570 575

Ser Ser Pro Val Pro Ser Ser Thr Ala Pro Lys Thr Pro Ser Leu Ser
 5 580 585 590

Ser Thr Gln Pro Thr Arg Val Trp Ser Gly Pro Pro Ala Val Gly Gln
 595 600 605

10 Glu Arg Leu Pro Gln Ser Ser Met Pro Gln Gln His Glu Gly Pro Ser
 610 615 620

Leu Asn Pro Phe Asp Glu Glu Asp Leu Ser Ser Pro Met Glu Glu Ala
 15 625 630 635 640

Thr Thr Gly Pro Pro Ala Ala Gly Val Ser Leu Asp Pro Ser Ala Arg
 645 650 655

Ile Leu Lys Glu Tyr Asn Pro Phe Glu Glu Glu Asp Glu Glu Glu Glu
 20 660 665 670

Ala Val Ala Gly Asn Pro Phe Ile Gln Pro Asp Ser Pro Ala Pro Asn
 675 680 685

25 Pro Phe Ser Glu Glu Asp Glu His Pro Gln Gln Arg Leu Ser Ser Pro
 690 695 700

Leu Val Pro Gly Asn Pro Phe Glu Glu Pro Thr Cys Ile Asn Pro Phe
 30 705 710 715 720

Glu Met Asp Ser Asp Ser Gly Pro Glu Ala Glu Glu Pro Ile Glu Glu
 725 730 735

Glu Leu Leu Leu Gln Gln Ile Asp Asn Ile Lys Ala Tyr Ile Phe Asp
 35 740 745 750

Ala Lys Gln Cys Gly Arg Leu Asp Glu Val Glu Val Leu Thr Glu Asn
 755 760 765

40 Leu Arg Glu Leu Lys His Thr Leu Ala Lys Gln Lys Gly Gly Thr Asp
 770 775 780

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 <211> 1659
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 <213> Homo sapiens

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 gctgaagcat cctgggcage tgtgaaatca ggtgaagtag atttacatca gctggcgagt 300
 acatgggcca aagcttatgc tgagaccacg tttagagcatg caaggcctga agaaccacgc 360
 tgggatgaag attttgcaga tgtgtaccat gacttaattc attctcctgc ctctgaaact 420
 ctcttaaat tggaaacataa ttactttgtt agtatctcag aactgattgg tgaaagagat 480
 15 gtggagctga aaaaattacg agagagacaa ggtattgaaa tggaaaaagt catgcaggaa 540
 ttgggaaaat cactgacaga tcaagatgta aattcactgg ctgctcagca ttttgaatcc 600
 cagcaagacc tagaaaataa atggtcgaat gaattaaaac aatcaactgc catccaaaaa 660
 caagagtatc aagaatgggt aataaaaactt caccaagacc taaaaaaccc caacaacagc 720
 tcccttagtg aggaaattaa agttcagcca agtcagttca gagaatctgt agaagcaatt 780
 20 ggaaggattt atgaggaaca gagaaagtta gaagaaagtt ttaccattca cttaggagcc 840
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 <211> 552
 <212> PRT
 40 <213> Homo sapiens

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Tyr Lys Phe Lys Val Gly Ser Gln Cys Leu Glu Leu Arg Val Pro Leu
 20 25 30

Lys Phe Pro Val Gln Glu Asn Ala Ser His Leu His Gly Arg Leu Met
 5 35 40 45

Leu Leu His Ser Leu Pro Cys Phe Ile Glu Lys Asp Leu Lys Glu Ala
 50 55 60

10 Leu Thr Gln Phe Ile Glu Glu Glu Ser Leu Ser Asp Tyr Asp Arg Asp
 65 70 75 80

Ala Glu Ala Ser Leu Ala Ala Val Lys Ser Gly Glu Val Asp Leu His
 85 90 95

15 Gln Leu Ala Ser Thr Trp Ala Lys Ala Tyr Ala Glu Thr Thr Leu Glu
 100 105 110

His Ala Arg Pro Glu Glu Pro Ser Trp Asp Glu Asp Phe Ala Asp Val
 20 115 120 125

Tyr His Asp Leu Ile His Ser Pro Ala Ser Glu Thr Leu Leu Asn Leu
 130 135 140

25 Glu His Asn Tyr Phe Val Ser Ile Ser Glu Leu Ile Gly Glu Arg Asp
 145 150 155 160

Val Glu Leu Lys Lys Leu Arg Glu Arg Gln Gly Ile Glu Met Glu Lys
 165 170 175

30 Val Met Gln Glu Leu Gly Lys Ser Leu Thr Asp Gln Asp Val Asn Ser
 180 185 190

Leu Ala Ala Gln His Phe Glu Ser Gln Gln Asp Leu Glu Asn Lys Trp
 35 195 200 205

Ser Asn Glu Leu Lys Gln Ser Thr Ala Ile Gln Lys Gln Glu Tyr Gln
 210 215 220

40 Glu Trp Val Ile Lys Leu His Gln Asp Leu Lys Asn Pro Asn Asn Ser
 225 230 235 240

Ser Leu Ser Glu Glu Ile Lys Val Gln Pro Ser Gln Phe Arg Glu Ser
 245 250 255

Val Glu Ala Ile Gly Arg Ile Tyr Glu Glu Gln Arg Lys Leu Glu Glu
260 265 270

Ser Phe Thr Ile His Leu Gly Ala Gln Leu Lys Thr Met His Asn Leu
5 275 280 285

Arg Leu Leu Arg Ala Asp Met Leu Asp Phe Cys Lys His Lys Arg Asn
290 295 300

10 His Arg Ser Gly Val Lys Leu His Arg Leu Gln Thr Ala Leu Ser Leu
305 310 315 320

Tyr Ser Thr Ser Leu Cys Gly Leu Val Leu Leu Val Asp Asn Arg Ile
15 325 330 335

Asn Ser Tyr Ser Gly Ile Lys Arg Asp Phe Ala Thr Val Cys Gln Glu
340 345 350

Cys Thr Asp Phe His Phe Pro Arg Ile Glu Glu Gln Leu Glu Val Val
20 355 360 365

Gln Gln Val Val Leu Tyr Ala Arg Thr Gln Arg Arg Ser Lys Leu Lys
370 375 380

25 Glu Ser Leu Asp Ser Gly Asn Gln Asn Gly Gly Asn Asp Asp Lys Thr
385 390 395 400

Lys Asn Ala Glu Arg Asn Tyr Leu Asn Val Leu Pro Gly Glu Phe Tyr
405 410 415

30 Ile Thr Arg His Ser Asn Leu Ser Glu Ile His Val Ala Phe His Leu
420 425 430

Cys Val Asp Asp His Val Lys Ser Gly Asn Ile Thr Ala Arg Asp Pro
35 435 440 445

Ala Ile Met Gly Leu Arg Asn Ile Leu Lys Val Cys Cys Thr His Asp
450 455 460

40 Ile Thr Thr Ile Ser Ile Pro Leu Leu Leu Val His Asp Met Ser Glu
465 470 475 480

Glu Met Thr Ile Pro Trp Cys Leu Arg Arg Ala Glu Leu Val Phe Lys
485 490 495

Cys Val Lys Gly Phe Met Met Glu Met Ala Ser Trp Asp Gly Gly Ile
500 505 510

Ser Arg Thr Val Gln Phe Leu Val Pro Gln Ser Ile Ser Glu Glu Met
5 515 520 525

Phe Tyr Gln Leu Ser Asn Met Leu Pro Gln Ile Phe Arg Val Ser Ser
530 535 540

10 Thr Leu Thr Leu Thr Ser Lys His
545 550

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15 <211> 1050

<212> DNA

<213> Homo sapiens

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gctctgagcc agataaatac aaagcttctg gcagaaatga agatgaaaaa ggattttattt 180
cctgttggga gagaaattgc tggaattgta ttagatgttg gaagcaaggt atcattcttt 240
caaccagatg atgaagtagt tggaattttg cccctggact ctgaagaccc tggactttgt 300
25 gaagttgtta gagtacatga gcattacttg gttcataaac cagaaaagggt cacatggacg 360
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gatgaaccca ttccactgta tgaggcaaaa gtttccatgg aagctgttca gaaaaatcaa 1020
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40 <210> 10

<211> 349

<212> PRT

<213> Homo sapiens

<400> 10

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5 Phe Val Phe Gln Glu Lys Glu Asp Leu Pro Val Thr Glu Asp Asn Phe
20 25 30

Val Lys Leu Gln Val Lys Ala Cys Ala Leu Ser Gln Ile Asn Thr Lys
35 40 45

10 Leu Leu Ala Glu Met Lys Met Lys Lys Asp Leu Phe Pro Val Gly Arg
50 55 60

Glu Ile Ala Gly Ile Val Leu Asp Val Gly Ser Lys Val Ser Phe Phe
15 65 70 75 80

Gln Pro Asp Asp Glu Val Val Gly Ile Leu Pro Leu Asp Ser Glu Asp
85 90 95

20 Pro Gly Leu Cys Glu Val Val Arg Val His Glu His Tyr Leu Val His
100 105 110

Lys Pro Glu Lys Val Thr Trp Thr Glu Ala Ala Gly Ser Ile Arg Asp
115 120 125

25 Gly Val Arg Ala Tyr Thr Ala Leu His Tyr Leu Ser His Leu Ser Pro
130 135 140

Gly Lys Ser Val Leu Ile Met Asp Gly Ala Ser Ala Phe Gly Thr Ile
30 145 150 155 160

Ala Ile Gln Leu Ala His His Arg Gly Ala Lys Val Ile Ser Thr Ala
165 170 175

35 Cys Ser Leu Glu Asp Lys Gln Cys Leu Glu Arg Phe Arg Pro Pro Ile
180 185 190

Ala Arg Val Ile Asp Val Ser Asn Gly Lys Val His Val Ala Glu Ser
195 200 205

40 Cys Leu Glu Glu Thr Gly Gly Leu Gly Val Asp Ile Val Leu Asp Ala
210 215 220

Gly Val Arg Leu Tyr Ser Lys Asp Asp Glu Pro Ala Val Lys Leu Gln
225 230 235 240

Leu Leu Pro His Lys His Asp Ile Ile Thr Leu Leu Gly Val Gly Gly
5 245 250 255

His Trp Val Thr Thr Glu Glu Asn Leu Gln Leu Asp Pro Pro Asp Ser
260 265 270

10 His Cys Leu Phe Leu Lys Gly Ala Thr Leu Ala Phe Leu Asn Asp Glu
275 280 285

Val Trp Asn Leu Ser Asn Val Gln Gln Gly Lys Tyr Leu Cys Ile Leu
290 295 300

15 Lys Asp Val Met Glu Lys Leu Ser Thr Gly Val Phe Arg Pro Gln Leu
305 310 315 320

20 Asp Glu Pro Ile Pro Leu Tyr Glu Ala Lys Val Ser Met Glu Ala Val
325 330 335

Gln Lys Asn Gln Gly Arg Lys Lys Gln Val Val Gln Phe
340 345

25
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<211> 663
<212> DNA
<213> Homo sapiens

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35 gcacgctggg tgcaagactt ccgcctcaag gcttacgcca gcccgcgcaa gctcgagtc 240
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40 ggcttcgccc gctgcccgt cgtggtggag gacttcgtga aggattcggg cgctgtcttc 540
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tga 663

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<211> 220

<212> PRT

<213> Homo sapiens

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<400> 12

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10 Ser Gly Ala Ala Glu Gly Val Ser Ala Gln Ser Phe Leu His Cys Phe

20

25

30

Thr Met Ala Ser Thr Ala Phe Asn Leu Gln Val Ala Thr Pro Gly Gly

35

40

45

15

Lys Ala Met Glu Phe Val Asp Val Thr Glu Ser Asn Ala Arg Trp Val

50

55

60

Gln Asp Phe Arg Leu Lys Ala Tyr Ala Ser Pro Ala Lys Leu Glu Ser

20

65

70

75

80

Ile Asp Gly Ala Arg Tyr His Ala Leu Leu Ile Pro Ser Cys Pro Gly

85

90

95

25 Ala Leu Thr Asp Leu Ala Ser Ser Gly Ser Leu Ala Arg Ile Leu Gln

100

105

110

His Phe His Ser Glu Ser Lys Pro Ile Cys Ala Val Gly His Gly Val

115

120

125

30

Ala Ala Leu Cys Cys Ala Thr Asn Glu Asp Arg Ser Trp Val Phe Asp

130

135

140

Ser Tyr Ser Leu Thr Gly Pro Ser Val Cys Glu Leu Val Arg Ala Pro

35

145

150

155

160

Gly Phe Ala Arg Leu Pro Leu Val Val Glu Asp Phe Val Lys Asp Ser

165

170

175

40 Gly Ala Cys Phe Ser Gly Leu Gly Ala Ala Pro Gly Trp Gly Arg Gly

180

185

190

Gly Lys Gln Glu Asp Arg Pro Pro Glu Glu Gln Arg Arg Ala Gly Glu

195

200

205

Asp Phe Pro Ile Tyr Gln Cys Val Phe Ile Tyr Pro
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<212> PRT

<213> Homo sapiens

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Ser Ala Leu Pro His Asp Val Cys Gly Ser Asn Gly Leu Pro Leu Thr
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25 Pro Asn Ser Ile Lys Ile Leu Gly Arg Phe Gln Ile Leu Lys Thr Ile
 35 40 45

30 Thr His Pro Arg Leu Cys Gln Tyr Val Asp Ile Ser Arg Gly Lys His
 50 55 60

Glu Arg Leu Val Val Val Ala Glu His Cys Glu Arg Ser Leu Glu Asp
 65 70 75 80

35 Leu Leu Arg Glu Arg Lys Pro Val Ser Cys Ser Thr Val Leu Cys Ile
 85 90 95

Ala Phe Glu Val Leu Gln Gly Leu Gln Tyr Met Asn Lys His Gly Ile
 100 105 110

40 Val His Arg Ala Leu Ser Pro His Asn Ile Leu Leu Asp Arg Lys Gly
 115 120 125

His Ile Lys Leu Ala Lys Phe Gly Leu Tyr His Met Thr Ala His Gly
 130 135 140

Asp Asp Val Asp Phe Pro Ile Gly Tyr Pro Ser Tyr Leu Ala Pro Glu
 5 145 150 155 160

Val Ile Ala Gln Gly Ile Phe Lys Thr Thr Asp His Met Pro Ser Lys
 165 170 175

10 Lys Pro Leu Pro Ser Gly Pro Lys Ser Asp Val Trp Ser Leu Gly Ile
 180 185 190

Ile Leu Phe Glu Leu Cys Val Gly Arg Lys Leu Phe Gln Ser Leu Asp
 195 200 205

15 Ile Ser Glu Arg Leu Lys Phe Leu Leu Thr Leu Asp Cys Val Asp Asp
 210 215 220

Thr Leu Ile Val Leu Ala Glu Glu His Gly Cys Leu Asp Ile Ile Lys
 20 225 230 235 240

Glu Leu Pro Glu Thr Val Ile Asp Leu Leu Asn Lys Cys Leu Thr Phe
 245 250 255

25 His Pro Ser Lys Arg Pro Thr Pro Asp Glu Leu Met Lys Asp Lys Val
 260 265 270

Phe Ser Glu Val Ser Pro Leu Tyr Thr Pro Phe Thr Lys Pro Ala Ser
 275 280 285

30 Leu Phe Ser Ser Ser Leu Arg Cys Ala Asp Leu Thr Leu Pro Glu Asp
 290 295 300

Ile Ser Gln Leu Cys Lys Asp Ile Asn Asn Asp Tyr Leu Ala Glu Arg
 35 305 310 315 320

Ser Ile Glu Glu Val Tyr Tyr Leu Trp Cys Leu Ala Gly Gly Asp Leu
 325 330 335

40 Glu Lys Glu Leu Val Asn Lys Glu Ile Ile Arg Ser Lys Pro Pro Ile
 340 345 350

Cys Thr Leu Pro Asn Phe Leu Phe Glu Asp Gly Glu Ser Phe Gly Gln
 355 360 365

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	Leu Cys Gln Leu Arg Asn Arg Leu Lys Asp Val Gly Gly Glu Ala Phe	
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	Tyr Pro Leu Leu Glu Asp Asp Gln Ser Asn Leu Pro His Ser Asn Ser	
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10	Asn Asn Glu Leu Ser Ala Ala Ala Met Leu Pro Leu Ile Ile Arg Glu	
	420	430
	Lys Asp Thr Glu Tyr Gln Leu Asn Arg Ile Ile Leu Phe Asp Arg Leu	
	435	445
15	Lys Ala Tyr Pro Tyr Lys Lys Asn Gln Ile Trp Lys Glu Ala Arg Val	
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	Asp Ile Pro Pro Leu Met Arg Gly Leu Thr Trp Ala Ala Leu Leu Gly	
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	Val Glu Gly Ala Ile His Ala Lys Tyr Asp Ala Ile Asp Lys Asp Thr	
	485	495
25	Pro Ile Pro Thr Asp Arg Gln Ile Glu Val Asp Ile Pro Arg Cys His	
	500	510
	Gln Tyr Asp Glu Leu Leu Ser Ser Pro Glu Gly His Ala Lys Phe Arg	
	515	525
30	Arg Val Leu Lys Ala Trp Val Val Ser His Pro Asp Leu Val Tyr Trp	
	530	540
	Gln Gly Leu Asp Ser Leu Cys Ala Pro Phe Leu Tyr Leu Asn Phe Asn	
35	545	560
	Asn Glu Ala Leu Ala Tyr Ala Cys Met Ser Ala Phe Ile Pro Lys Tyr	
	565	575
40	Leu Tyr Asn Phe Phe Leu Lys Asp Asn Ser His Val Ile Gln Glu Tyr	
	580	590
	Leu Thr Val Phe Ser Gln Met Ile Ala Phe His Asp Pro Glu Leu Ser	
	595	605

Asn His Leu Asn Gln Ile Gly Phe Ile Pro Asp Leu Tyr Ala Ile Pro
610 615 620

Trp Phe Leu Thr Met Phe Thr His Val Phe Pro Leu His Lys Ile Phe
5 625 630 635 640

His Leu Trp Asp Thr Leu Leu Leu Gly Asn Ser Ser Phe Pro Phe Cys
645 650 655

10 Ile Gly Val Ala Ile Leu Gln Gln Leu Arg Asp Arg Leu Leu Ala Asn
660 665 670

Gly Phe Asn Glu Cys Ile Leu Leu Phe Ser Asp Leu Pro Glu Ile Asp
675 680 685

15 Ile Glu Arg Cys Val Arg Glu Ser Ile Asn Leu Phe Cys Trp Thr Pro
690 695 700

Lys Ser Ala Thr Tyr Arg Gln His Ala Gln Pro Pro Lys Pro Ser Ser
20 705 710 715 720

Asp Ser Ser Gly Gly Arg Ser Ser Ala Pro Tyr Phe Ser Ala Glu Cys
725 730 735

25 Pro Asp Pro Pro Lys Thr Asp Leu Ser Arg Glu Ser Ile Pro Leu Asn
740 745 750

Asp Leu Lys Ser Glu Val Ser Pro Arg Ile Ser Ala Glu Asp Leu Ile
755 760 765

30 Asp Leu Cys Glu Leu Thr Val Thr Gly His Phe Lys Thr Pro Ser Lys
770 775 780

Lys Thr Lys Ser Ser Lys Pro Lys Leu Leu Val Val Asp Ile Leu Asn
35 785 790 795 800

Ser Glu Asp Phe Ile Arg Gly His Ile Ser Gly Ser Ile Asn Ile Pro
805 810 815

40 Phe Ser Ala Ala Phe Thr Ala Glu Gly Glu Leu Thr Gln Gly Pro Tyr
820 825 830

Thr Ala Met Leu Gln Asn Phe Lys Gly Lys Val Ile Val Ile Val Gly
835 840 845

His Val Ala Lys His Thr Ala Glu Phe Ala Ala His Leu Val Lys Met
 850 855 860

Lys Tyr Pro Arg Ile Cys Ile Leu Asp Gly Gly Ile Asn Lys Ile Lys
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Pro Thr Gly Leu Leu Thr Ile Pro Ser Pro Gln Ile
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<212> DNA

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 20 caggccctgg cttttgttca ggatcttgta ccggtctctt tgaactttca cacctataca 240
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Asp Thr Lys Cys His Leu Tyr Asn Ala Leu Asn Val Pro Leu His Asn
35 40 45

20 Arg Arg His Gln Leu Lys Met Arg Asp Ile Ala Gly Gln Ala Leu Ala
50 55 60

Phe Val Gln Asp Leu Val Pro Ala Leu Leu Asn Phe His Thr Tyr Thr
65 70 75 80

25 Glu Gln Arg Ile Gln Ile Phe Pro Val Asp Ser Ala Ile Asp Thr Ile
85 90 95

Ser Pro Leu Asn Gln Lys Phe Ser Gln Tyr Leu His Glu Asn Ala Ser
30 100 105 110

Tyr Val Arg Pro Leu Glu Glu Gly Met Leu His Leu Phe Glu Ser Ile
115 120 125

35 Thr Glu Asp Thr Val Thr Val Leu Glu Thr Thr Val Lys Leu Lys Met
130 135 140

Phe Ser Asp His Leu Thr Ser Tyr Val Arg Phe Leu Arg Lys Ile Leu
145 150 155 160

40 Pro Tyr Gln Leu Lys Ser Leu Glu Glu Glu Cys Glu Ser Ser Leu Cys
165 170 175

Thr Pro Ala Leu Arg Ala Arg Asn Leu Glu Leu Ser Gln Asp Met Lys
180 185 190

5 Thr Met Thr Ala Val Phe Glu Lys Leu Gln Thr Tyr Val Thr Leu Leu
195 200 205

Ala Leu Pro Ser Thr Glu Pro Asp Gly Leu Leu Arg Thr Asn Tyr Thr
210 215 220

10 Ser Val Leu Thr Asn Val Gly Ala Ala Leu His Gly Phe His Asp Val
225 230 235 240

Met Lys Asp Ile Ser Lys His Tyr Ser Gln Lys Ala Ser Ile Glu His
15 245 250 255

Glu Ile Pro Thr Ala Thr Gln Lys Leu Val Thr Thr Asn Asp Cys Ile
260 265 270

20 Leu Ser Ser Ala Val Thr Leu Thr Asn Gly Ala Gly Lys Ile Ala Ser
275 280 285

Phe Phe Gly Asn Asn Val Asp Tyr Phe Ile Ala Ser Leu Ser Tyr Gly
290 295 300

25 Pro Lys Thr Ala Ser Gly Phe Ile Ser Pro Leu Ser Ala Glu Cys Met
305 310 315 320

Leu Gln Tyr Lys Lys Lys Ala Ala Ala Tyr Met Lys Ser Leu Arg Thr
325 330 335

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340 345 350

Val Leu Leu Ser Ser Thr Glu Ser Arg Glu Gly Leu Ala Gln Gln Val
35 355 360 365

Gln Gln Ser Leu Glu Lys Ile Ser Lys Leu Glu Gln Glu Lys Glu His
370 375 380

40 Trp Met Leu Glu Ala Gln Leu Ala Lys Ile Lys Leu Glu Lys Glu Asn
385 390 395 400

Gln Arg Ile Ala Asp Arg Leu Arg Gly Thr Thr Ser Ala Gln Leu Pro
405 410 415

Gly Leu Ala Gln Glu Asn Ala Thr Val Pro Ile Ala Ser Ser Gln Glu
420 425 430

5 Glu Ala Ala Ala Lys Val Leu Thr Glu Pro Val Gln Ser Thr Ser Leu
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Val Gly Met Leu Thr Arg Thr Pro Asp Ser Glu Ala Pro Asp Val Glu
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10 Ser Arg Glu Asp Leu Ile Lys Ser His Tyr Met Ala Arg Ile Ala Glu
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Leu Thr Ser Gln Leu Gln Leu Ala Asp Ser Lys Ser Val His Phe Tyr
485 490 495

15 Ala Glu Cys Arg Ala Leu Ser Lys Arg Leu Ala Leu Ala Glu Lys Ser
500 505 510

20 Lys Glu Thr Leu Thr Glu Glu Met Arg Leu Ala Ser Gln Asn Ile Ser
515 520 525

Arg Leu Gln Asp Glu Leu Met Thr Thr Lys Arg Ser Tyr Glu Asp Gln
530 535 540

25 Leu Ser Met Met Ser Asp His Leu Cys Ser Met Asn Glu Thr Leu Ser
545 550 555 560

Lys Gln Arg Glu Glu Ile Asp Thr Leu Lys Met Ala Ser Lys Gly Asn
565 570 575

30 Ser Lys Lys Thr Arg Asn Arg
580

35